DOCUMENT RESUME

ED 063 713 EC 042 225

AUTHOR	Stark, Joel; And Others
TITLE	The Non-Verbal Child: Some Clinical Guidelines.
INSTITUTION	City Univ. of New York, Flushing, N.Y. Queens Coll.
PUB DATE	72
NOTE	25p.; Based on presentations to the conventions of the ACLD (Atlantic City, New Jersey, February, 1972) and CEC (Washington, D.C., March, 1972)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Behavior Change; Case Studies; *Exceptional Child Education; Guidelines; *Language Development; *Language Handicapped; Learning Disabilities; Neurologically Handicapped; Operant Conditioning; *Preschool Children; Reinforcement

ABSTRACT

Selected principles and procedures related to language training for nonverbal children are presented. The participating children are 3 to 6 years of age and are enrolled at a clinic for a minimal of 3 hours of individual therapy a week. The language problems vary considerably. The possibility of some central nervous system dysfunction is thought to be the major etiological factor for the majority of the children. Principles and procedures are based on behavior change principles and reinforcement theory. Topics discussed include discriminative stimulus, reinforcing stimulus, recording progress, trials, experimental approaches, reversal, baseline, use of consequences, use of tokens, time out from positive reinforcement, antecedent events, programing stimuli, stimulus support, and modifying social interaction. Illustrative case studies are presented throughout the report. Emphasis is on the application of an experimental approach to the modification of language behavior. The role of recent research in language acquisition as well as the relationship of the language training to the social environment is questioned and discussed. (Author/CB)

THE NON-VERBAL CHILD: SOME CLINICAL GUIDELINES

Joel Stark

Robert L. Rosenbaum

Dorothea Schwartz

Arlene Wisan

Speech and Hearing Center

Queens College, City University of New York

(This paper is based upon presentations to the Association of Children with Learning Disabilities, Atlantic City, New Jersey, February, 1972 and the Council on Exceptional Children, Washington, D.C., March, 1972)

Abstract

This article describes some principles and procedures related to language training for non-verbal children. Reinforcement theory is discussed and illustrative cases are presented. Emphasis is on the application of an experimental approach to the modification of language behavior. The role of recent research in language acquisition as well as the relationship of the language training to the social environment is questioned and discussed.

The establishment of adequate language performance in the young non-verbal child is a complex and arduous task. The purpose of this article is to describe some of the procedures which we have been using with the non-verbal child. In the first part, we will outline some of the principles upon which we base our work. This is followed by case studies illustrating the application of these principles and a discussion of some relevant questions about the direction of our therapeutic procedures.

Behavior of the Children

The children with whom we are concerned have very limited functional communication. They are between three and six years of age and are enrolled at the clinic for a minimum of three hours of individual therapy per week. The language behaviors of these children vary considerably. Some have never been heard to produce speech and are "non-verbal" in the truest sense. Others echo utterances without regard for communicative intent. Some of the children are able to imitate vocal and non-vocal stimuli and may respond appropriately to language where the referent is present and the form is simple (e.g. "sit down", "give me the ball").

For most of the children, the possibility of some type of central nervous system dysfunction was considered the primary etiological factor. Based upon observation of performance with non-verbal tasks such as block building, sorting and puzzles, there was evidence to suggest that these children possess enough intellectual integrity to learn verbal language. Many of the children have behavioral patterns which are asocial and have been found to occur in the histories of children classified as autistic, aphasic and brain-injured. They often do not look at people, cry frequently, play with toys in

a bizarre manner, smile and laugh inappropriately, bite their hands and arms, and move about the room randomly. Gaining control of their behavior so that they will attend to the stimuli being presented by the clinician is often the first major goal in their training.

Underlying Principles

There are some constructs which guide us in our work with the non-verbal child. To begin with, language behavior is comprised of observable and recordable events. These events include the stimuli which elicit the language behavior (antecedent events) and those which strengthen or weaken the probability that once emitted, this behavior will occur again (consequent events). When a clinician shows a child a picture of a cow and the child says "cow", the clinician might smile and say "Good boy". In this case, the presence of the picture stimulus caused the child to emit "cow" which caused the clinician to smile and say "Good boy". The first stimulus (picture of the cow) is referred to as the discriminative stimulus (S^d) because a response in its presence will elicit a reinforcing stimulus (e.g., clinician saying "Good boy"). If the clinician were to say "NO" and frown, the probability is that this would weaken the child's tendency to respond in the same manner.

What happens before verbal behavior is emitted as well as what happens after it is emitted will affect its nature and frequency. The child may emit "I want candy" in the presence of a candy machine because in the past this response was reinforced. The child got candy. It is important to recognize that a reinforcing stimulus functions in different ways and is functionally related to the behavior it follows. We tend to classify "good" things as positive reinforcers and these would ordinarily include social praise, ice cream,

candy, food and trinkets.

Recording progress. It is difficult for clinicians to serve as data collectors because as they do therapy, the use of check lists, counters or other recording systems may interfere with the presentation of stimuli. Ideally, such recording would be automated. In College Clinics, students are often available to record data. Where this is not possible, clinicians may use digital hand counters or simplified check lists.

In many programs, therapeutic progress is measured by administering pre-and post-test instruments. This affords an excellent means for charting progress over periods of time, but is of little value in the day to day management of the child. We have found it exceedingly useful to gather data daily in the course of therapy and to use these data as a means of monitoring the effectiveness of our procedures. Thus, when a clinician attempts to teach a language skill to a child, there is a record of the number of times the stimuli were presented, under what conditions, and with what success. The clinician is able to modify whatever procedures need to be modified on the basis of empirical observation rather than subjective speculation.

Figure 1 shows one recording form which we have found very useful.

Insert Figure 1 here

For each trial, the discriminative stimulus in the presence of which the child is expected to respond is noted. Thus, if the clinician held up a picture or an object and said "What's this?", it would be recorded in this column. In the next four columns, checks are used. Pro refers to whether or not the clinician had to prompt or aid the child in order for him to respond. For example, she may produce the first phoneme of the response she wants the child to emit, or

help the child to close his lips in order to produce a sound. Mod is a form of prompt where the clinician or another person demonstrates the desired response for the child. In the R column, the clinician records the response. The S^r refers to the reinforcing stimulus. If the child's response was followed by a token, social praise, food, or any other reinforcer, this is checked. The last column permits the observer to record any novel behavior or to comment on the trial. This form is organized in blocks of ten trials to simplify summarizing the data. In spite of the limitations, we have found this recording procedure to be an invaluable adjunct in our therapy.

Experimental approaches. Data collection and analysis does often demonstrate that we have made improvement in therapy. More recent case reports have described progress by keeping careful records of the subjects responses (Goldstein and Lanyon, 1971; Leonard, 1971; Ryan, 1971; Daly et.al., 1972). However, one might argue that in some instances, maturation and the passage of time might have the same effect. Hence, a major responsibility is to apply experimental procedures to study some of the variables responsible for the modification of behavior. That is, to examine causal relationships and demonstrate that a specific procedure was or was not instrumental in producing change. To this end, the clinical experimental procedures reported by McReynolds and Huston (1971) and Shaw and Shrum (1972) are especially instructive.

One experimental design which is commonly used is referred to as a reversal design or an A-B-A procedure. The clinician first observes the child's behavior over a period of time so that he can make a reliable statement about its occurrence in the child's repertoire. It is a stable record of the child's performance and is referred to as the baseline. During the next few sessions, we may begin an experimental procedure of some kind, while continuing to record the child's behavioral responses. Perhaps we will change the reinforcer or the

reinforcement schedule, vary the nature of the discriminative stimulus by using a model, or a different kind of prompt, or different stimuli. After the experimental treatment sessions, we then return to the baseline condition again to see if the behavior remains when the experimental variables are removed. This reversal allows us to verify in a more precise way, whether or not our procedures are responsible for changes in behavior.

Another design is referred to as a multiple baseline design. Here, more than one behavior is recorded during the baseline condition. However, in the experimental conditions only one of these behaviors is trained at a time to determine whether the experimental treatment is effective. There are, of course, many possible variations to these experimental procedures.

The Use of Consequences

The application of a reinforcing stimuli to gain control of behavior can best be illustrated by some clinical studies. Barry (C.A. 4 yrs.) was observed to be a child who moved about the room in a circular motion; at times touching and smelling the walls and furniture. He did not respond in the presence of stimuli such as "Barry sit" or other verbal stimuli intended to have him look at the clinician. His mother reported that he was generally unaware of the presence of people. At home he would not eat at the table, sit on a chair, or play with toys. During the year, a number of ritualistic type of behaviors emerged including head banging, skin biting, repetitive circular movement, and sucking of a knuckle.

After we observed Barry's behavior, our first goal was to get him to attend to the clinician. At first, we wanted him to sit in a chair. Since he did sit on a toilet seat at home, teaching him sitting behavior seemed feasible.

The sitting response in the presence of the discriminative stimulus "Barry sit" was modeled by the clinicians; then we prompted Barry by placing him in the chair and reinforcing this with social praise, bubbles and candy. His inappropriate and disruptive behavior continued for three hour long sessions and he failed to respond to the sit down stimulus. During the third session, there were only three correct unprompted responses out of fifty-four trials.

Because Barry's mother reported that he especially enjoyed eating bacon, during the fourth session, the clinician placed a piece of bacon on the chair. Barry was observed to remain in close proximity to the chair, although he still would not sit down. The clinician then held the bacon in front of the chair. As Barry moved in line with the chair, she said "Barry, sit", placed him in the chair and gave him a piece of bacon. During this session, Barry responded, without having to be prompted, twenty-one times out of forty-six presentations of the discriminative stimulus. By the seventh session there was 100% correct responding to more than twenty presentations of the discriminative stimulus. Hence the clinician found a reinforcing stimulus which was effective.

Sometimes clinicians are very naive about the way in which they describe and use reinforcers. The fact that a child is being fed, or is given a piece of candy, or is given a trinket, and fails to respond any differently is often used as evidence that the application of reinforcement principles is not effective. Clearly, the successful application of a consequent event or reinforcing stimulus is highly individual. Its effectiveness can only be measured by examining the effect it has upon the behavior which it follows. The search for an effective reinforcing stimulus, particularly for the nonverbal child, is a very difficult one. Clinicians need to find out about the objects and routines which produce observable changes in behavior at home. How do the parents teach, discipline, love, and in the broadest sense, live

with the child? While social praise in its many forms is the most conventional reinforcer, it alone may not serve to modify the behavior of the young non-verbal child.

Use of tokens. As Girardeau and Spradlin (1970) point out, a token system is potentially the most useful reinforcer in therapy. The advantage of the token system is that it does not interfere with the child's response. The clinician need not wait until the child chews and swallows a piece of food before presenting the next stimulus. Tokens can be presented or withdrawn (e.g., response cost); they allow the child to earn the kind of object or activity which is most reinforcing for him; and they permit the use of more powerful reinforcers (e.g., a trip to a zoo, restaurant or a highly desired toy). However, for most non-verbal children, it is not possible to delay the delivery of a reinforcer over a long period and the opportunity to exchange the tokens needs to be afforded very often.

In one study, using an A-B-A design, we examined the child's responses contingent upon social praise (e.g., "Good boy") and a token system where he could earn a piece of food or candy for every three tokens he received.

Insert Figure 2 here

In sessions 1 through 3 and 8 through 11, we used a token for food exchange and in sessions 4 through 7, social praise alone was used. There was a significant difference in the percentage of correct responding when the token exchange system was used. The child did significantly more poorly when only social praise was the reinforcer.

Often reinforcers are special for a specific child. We need to discover them. Neil (C.A. 3.5) had no functional speech, did not respond to people

moving about or to his parents leaving the room. Eye to face contact was avoided. When the examiner carried him, bounced him, swung him, threw him into the air and caught him, or even tickled him, his only response was a gentle attempt to escape. An outstanding ability was his "reading" of letters and numbers. The clinician would write these letters and numbers and Neil was able to say them. As he walked down the hall he would read the numbers on each of the clinic doors. In order to return him to the waiting room, the clinician would take a plastic letter, hold it in front of her, and walk down the hall, at which time Neil would follow. The efficacy of plastic letters as a reinforcing stimulus in order to gain control of his behavior and strengthen his language performance was clear. We presented the discriminative stimuli in blocks of 10 trials during part of three consecutive sessions, alternating between a social reinforcer plus a plastic letter and social reinforcement alone. While Neil's percentage of correct responding did not differ significantly during these experimental treatments, the discriminative stimuli had to be presented at least twice as often when only social reinforcers were used. Neil was not as attentive or interested in the task. When the letters were used, responses were made immediately.

One child's behavior was not being maintained with food reinforcers. Jerry (C.A. 5) would play with the food and then bite his hands. Although saying "No, don't do that" would be effective at times, this did not increase the number of correct responses substantially, nor did it decrease his biting the hands behavior. Jerry may have been reinforced by the attention given him when he played with his food and was told to eat it. Therefore, a different type of reinforcing stimulus was arranged. We instituted a play area physically apart from the work table area. A simple sorting task was presented. Jerry merely had to place a block in a box. When Jerry put it in or imitated the modeling

clinician, he was taken to the play area for a two minute period. At the sixth trial Jerry reached for the block even before he sat down. Then the clinician presented the discriminative stimulus two times before allowing him to go to the play area. At the 9th trial, the clinician called him to the work area instead of taking his hand. At the 16th trial he had to respond correctly three times before play was allowed. At the 25th trial, there were four correct responses. At the 29th trial, he walked back to the clinician and by the 33rd trial he ran back to the work area from the play area. At this point Jerry was required to produce five consecutive correct responses before reinforcement. During the next session, the task was changed to include discrimination between blocks of different colors and shapes, and the play period was decreased in time. The discriminative stimuli were gradually made more difficult and the reinforcement schedule was altered so that the time spent in the play area was decreased. Within eight sessions, Jerry was working effectively in blocks of twenty trials where the response was followed by social praise. At the end of a block of twenty trials, he was permitted to go to the play area.

Alan (C.A. 3.11) had no functional speech, threw objects which were in his reach, and never engaged in conventional children's play activities. He would neither sit on his mother's lap or in a chair. He usually held and smelled his blanket while having to be carried from one place to another. Alan cried frequently and would often scratch his flesh so that his body was covered with scratches. His parents had to keep long sleeve shirts and heavier pants on him so that he would not bleed from the scratching.

When we first saw Alan, we recorded the number of times that he began to cry and the amount of crying he did during these initial sessions. From the outset we introduced a time out from positive reinforcement procedure. Whenever Alan began to cry the clinician turned to the side and removed any stimulus

materials and reinforcers which were present until five seconds after the cessation of this undesirable behavior. Because some of his undesirable behavior may have been maintained by the adults who were attending to him, we removed all reinforcers whenever Alan became disruptive. The amount of crying was significantly modified by the fourth week. Compared to the first week where Alan cried 30% of the time (56 crying starts), by the 14th week, he cried only .06% of the time.

Some of these procedures were introduced at home. Of interest was the fact that when he banged his head on the floor at home, he would go to where there was an area rug and bang his head on that rather than on the bare floor. His parents responded to head banging by yelling "no" and "stop" and this had little success. We advised his mother to ignore this behavior, and within a month it ceased except in the presence of his father who continued to attend to it. When his father also began to ignore the behavior, it stopped. Many nonverbal children may use deviant behaviors to control their environment.

With regard to the selection of a consequent event, we are sometimes limited only by our own imagination. We have variously used hugging, tickling, jumping, rocking, balloon popping, trinkets, water play, flashing lights, and all variety of foods including ice cream and soda. What is important is that the selection and application of consequences be derived from empirical observation of the behavior.

Antecedent Events

We have been emphasizing some of the ways in which a child's behavior can be brought under stimulus control and maintained so that clinicians can more effectively teach them. Now we are concerned with the kinds of discriminative

stimuli which should be presented in therapy. Which stimuli should be presented first? Can you teach specific language responses or do you merely devise ways to unlock the child's innate capacity for using language? What is the contribution of the different theoretical approaches on which the clinician bases his daily goals?

The psycholinguist proposes theories of language acquisition. He tries to deal with abstractions concerning the structure of a language. He makes a distinction between the knowledge of linguistic rules (linguistic competence) and the skills and strategies used by the native speaker to actually produce and comprehend a language (linguistic performance). In child language, inferences are proposed about linguistic competence and described in terms of a set of rules or a grammar. Most studies of child language are observational in nature and have been concerned with the production of language. Typically spontaneous utterances of children are collected in a naturalistic setting such as the home, and then these are analyzed.

Investigators found that children who began to use two word utterances possessed grammars which were uniquely child-like. One small class of words occurred frequently in a relatively fixed position while others with which they were combined occurred less frequently. Braine (1963) called these "pivot" and "x-words", Brown and Bellugi (1964), "functors" and "contentives", and Miller and Ervin (1964), "operators" and "non-operators". Bloom (1970,1971) raised some important objections to the application of these "pivot" grammars. She felt that the semantic basis was overlooked. Suggesting that when an adult or child talks, their utterances serve different functions, she categorized speech events as follows:

1. Comments occurred when the referent was manifest and functioned to name or point out objects, persons, or events. A comment does not attempt to

influence the behavior of the receiver (e.g., "That's a car").

2. Reports occurred in the absence of a receiver and were informative utterances directed to a receiver. Reports do not attempt to influence the behavior of the receiver (e.g., "I have a car" (at home).

3. Directions were characterized by the child's seeking a change in the context, which he is unable or unwilling to effect himself, involving the behavior of someone else (e.g., "Give me the car").

4. Questions were characterized by the child's seeking information or confirmation and were directed to a receiver (e.g., "Is that your car?").

The implications of an approach which emphasizes the function of a speech event may be important for modifying the language of non-verbal children. Language responses occur within a communication interaction and it is the child's success in communication which is the relevant measure of his progress in the clinic. Hence, clinicians must transcend the highly structured and artificial setting of the clinic and be able to transfer these responses to more naturalistic and functional settings. Perhaps if clinicians would use certain kinds of speech events with a particular child, it would accelerate the acquisition process? Perhaps one child would respond more to questions and another to comments? An even more urgent question which clinicians must answer relates to the complexity of the language forms which they use when talking to a child. Should clinicians reduce the complexity of their own speech? Should they omit connectives, articles and other redundant parts of an utterance? Clinicians need to consider the paucity of language which many non-verbal children have and modify their own language so that utterances can be understood.

With regard to the formulation of specific teaching programs, we can only hypothesize that if children are taken through a prescribed series of steps which are consistent with the normal sequence, they will develop functional

language. To this end, a number of systematic programs have been reported (Lovaas et.al., 1966; Bricker and Bricker, 1970; Hartung, 1970). The hierarchy of stimulus events includes the acquisition of imitative skills at the outset and the gradual shaping of responses. By pairing the vocal imitation with objects, the child learns a core of noun labels. These are expanded into longer utterances by combining the labels with carrier phrases such as "Give me_____" or "I want_____". Presumably, the language stimuli becomes functional for the child.

These programs are well intentioned and do produce positive results. Perhaps their major function is to establish the conditions for further growth. The child begins to respond to verbal stimuli and is reinforced in their presence. Hence, he seeks new ways to use language and his continued progress is assured.

A significant question for clinicians who work with non-verbal children is the degree to which they can apply the findings of researchers working in normal language acquisition. Does the non-verbal child need to pass through certain stages in the developmental sequence? How does the establishment of imitative skills relate to language behavior? Do these children require special training in perceptual skills (e.g., visual and auditory memory, visual-motor sequencing)? How are these skills related to the acquisition of verbal language? What experiences provide the cognitive basis for using language?

In spite of the many teaching procedures in the literature, there is much more that we do not know about the acquisition of language in the non-verbal child, than there is that we do know. The important criteria is the degree to which we measure the effectiveness of our procedures and continue to search for new approaches.

Research in normal language acquisition is providing some significant guidelines. Bloom (1971) has pointed out that the earliest syntactic utterances

are related to existence, non-existence, and action upon a referent. Hence, programs designed to establish language in the non-verbal child might attend to what we call verbing. Children experience the relations between people (agents), objects, and actions well before they learn attributes of objects. They may respond in the presence of "red ball" but the response will be specific to that red ball and an attempt to teach a class of modifiers or noun labels is not likely to be productive. It would be more appropriate to consider the action involved and program a series of stimuli which present relations between actions with people and objects. Instead of modifier-noun constructions, clinicians need to present stimuli which relate to the world of action. Thus, they can teach "more car", "no car", "push car", or "car go" rather than "red car" or "big car". Similarly, an attempt to establish morphological distinctions such as plurals or different tense endings should be delayed until much later in the program. The basic questions for the clinician is (What or who) are the (people, objects) doing.

Programming stimuli. In teaching the non-verbal child, there are a number of principles which appear mandatory. The first is that stimuli should be presented in carefully graded increments. In this regard, we have found it helpful to use the notion of "critical elements" with regard to the organization of materials. An element is one lexical unit such as a noun, verb or adjective. As they are combined to expand the discriminative stimuli, clinicians need to manipulate only one element at a time. Thus, in teaching a construction like "the boy sitting" in response to a question such as "What is the boy doing" the clinician may next present a stimuli showing the boy running, or walking, or eating. Similarly in response to a "Who" question, it is preferable to manipulate only the agent (person) rather than the action as well. It is after both of these classes have been learned, that stimuli can become more complex.

Even then clinicians need to carefully monitor what they present.

A second principle is to build as much success as possible into the teaching program. For the non-verbal child whose history has included continual failure in the presence of speech, a significant part of the training program is to choose stimuli to which he is likely to respond correctly. In some instances, clinicians will need to repeat the presentation of stimuli already mastered in order to provide correct responding. It is the child's responses, not the clinician's ego which should determine the nature and direction of the program.

Stimulus support. There are many different ways to present stimuli and too often clinicians fail to rely upon visual and tactile kinesthetic cues. We have found that some non-verbal children will learn verbal language faster if the environment is structured. With one child, we used large sheets of differently colored construction paper to assist him in discriminating responses to "Who is it" and "What is it" questions. The child had to place the response cards on the appropriate color and he learned the responses more effectively this way. With another child, we constructed a "peep-show" window from a cardboard box in order to eliminate competing stimuli. We have also used gestures along with verbal stimuli to provide additional cues. For example, when asking a "who" question, the clinician placed her hands directly in front of her. For a "what" question, her hands were outstretched to the side. Sometimes, the use of the written word serves as an important source of stimulus support, particularly for a child like Neil whom we described earlier as having an outstanding ability to read letters and numbers. In one study with Neil, we wanted to determine whether the visual prompts would assist in the acquisition of verbal skill. We selected semantically equivalent phrases (e.g., "give me", "hand me") in a naturalistic play setting with children's toys, and the efficacy of using

visual prompts was confirmed. The teaching procedures we have used are similar to those reported by Sulzbacher and Costello (1970).

With another child, the use of a video-taped model resulted in an increase of appropriate language responses and a decrease in jargon (Roth, et.al., 1972). Even for non-verbal children, the use of televised modeling procedures represents an important new direction. Televised presentations have demonstrated reinforcing properties and their potential has not been adequately explored as yet.

Modifying Social Interaction

While clinicians are primarily concerned with verbal language, it is important that behavior which interferes with therapy be brought under control so that the child can be taught. Such behaviors as crying, biting, headbanging are disruptive in therapy and destructive to any social interaction. Zeilberger et.al. (1968) reduced aggressive behavior in a four and a half year old boy with a time out from positive reinforcement procedure. Bos.ow and Bailey (1969) describe a seven year old who was so destructive that he had to be tied to a door in a hallway because he could not be with other children. With reinforcement procedures, his aggressive behavior was virtually eliminated within a week and he would even embrace other children. Kirby and Toler (1970) increased the interaction between an "isolate" boy and his classmates by having him pass out candy to them and providing reinforcement as soon as he completed the task. Schell and Adams (1968) directed parents to use conditioning procedures to produce desired changes in their child's behavior and the results demonstrated improved social interaction.

At the clinic, we have observed verbal, physical and object inter-

actions with some of the children. Verbal interaction was defined as any verbal behavior, intelligible or not to the observer, involving another person. Physical interaction was defined as any physical contact between a child and another person. This did not include accidentally bumping into, or falling on another person. Object interaction was defined as the manipulation of an object, not necessarily related to its appropriate use.

In our group program, Alan is now reported to be the most enthusiastic, most contacting and communicating of the children present. During his first semester, in this group, out of 180 observations, his verbal interaction and physical interaction were zero, while his object interaction was 72%. The following semester his interaction pattern changed so that of 180 observations, his verbal interaction was 31%, his physical interaction was 1% and his object interaction was 52%. He became more eager to play and happy to be with other children.

When Neil entered our program, he did not appear to recognize people, with the exception of his grandparents. He did not respond to people moving about, or to his parents leaving the room. In addition to his individual therapy, he was placed into a group to note the extent and quality of his social interaction. His behavior was observed at 10 second intervals for approximately 15 minute periods over three sessions. Out of a total of 217 observations, 179 or 71% were object interactions. There were no vocalizations or peer interactions. He did not respond to the clinician or the other children in the room.

In the training sessions, one of the procedures was to allow him to enter the room where a few clinicians were sitting around as if they were statues. They sat for fifteen minutes, or until Neil recognized their presence by going over to one of them and touching, looking at, or saying something to her. For the first three sessions, he wandered about the room for the total time.

During the 4th session, he interacted with a clinician after 12 minutes, at which time all of the clinicians cheered and clapped. It took less than one minute during the 5th session before he interacted. After the 6th session, he came directly into the room, went to a clinician and said "Hi". As he learned their names, these were added, and a regular procedure was for him to say "Hi, person" when he came into the room and "Bye-Bye, person" when he left. At the present time, when Neil enters the center and sees one of the clinicians, it is not unusual for him to run toward her with a smile, say "Hi, person" and give her a hug and kiss.

We have attempted to observe interaction in a more systematic manner. Hopefully we may determine the variables and manipulate one or more of them to effect more appropriate interaction. How do we increase social interaction? What conditions maximize the child's social interaction? What is the relationship of the child's language behavior to the physical environment and/or to the people in his presence? It is questions such as these to which we must address ourselves. The non-verbal child represents an enormous challenge for the clinician. The establishment of appropriate language behavior in a communicative context can be the result of a systematic empirically based program. In this paper, we have tried to highlight some of the problems, procedures and new directions we must take.

Figure Legends

Figure 1. Recording form used during language therapy.

Figure 2. Responses to therapy using different reinforcers. In Sessions 1-4, and 8-11, social praise and a token system was used. In Sessions 4-7, social praise alone was used.

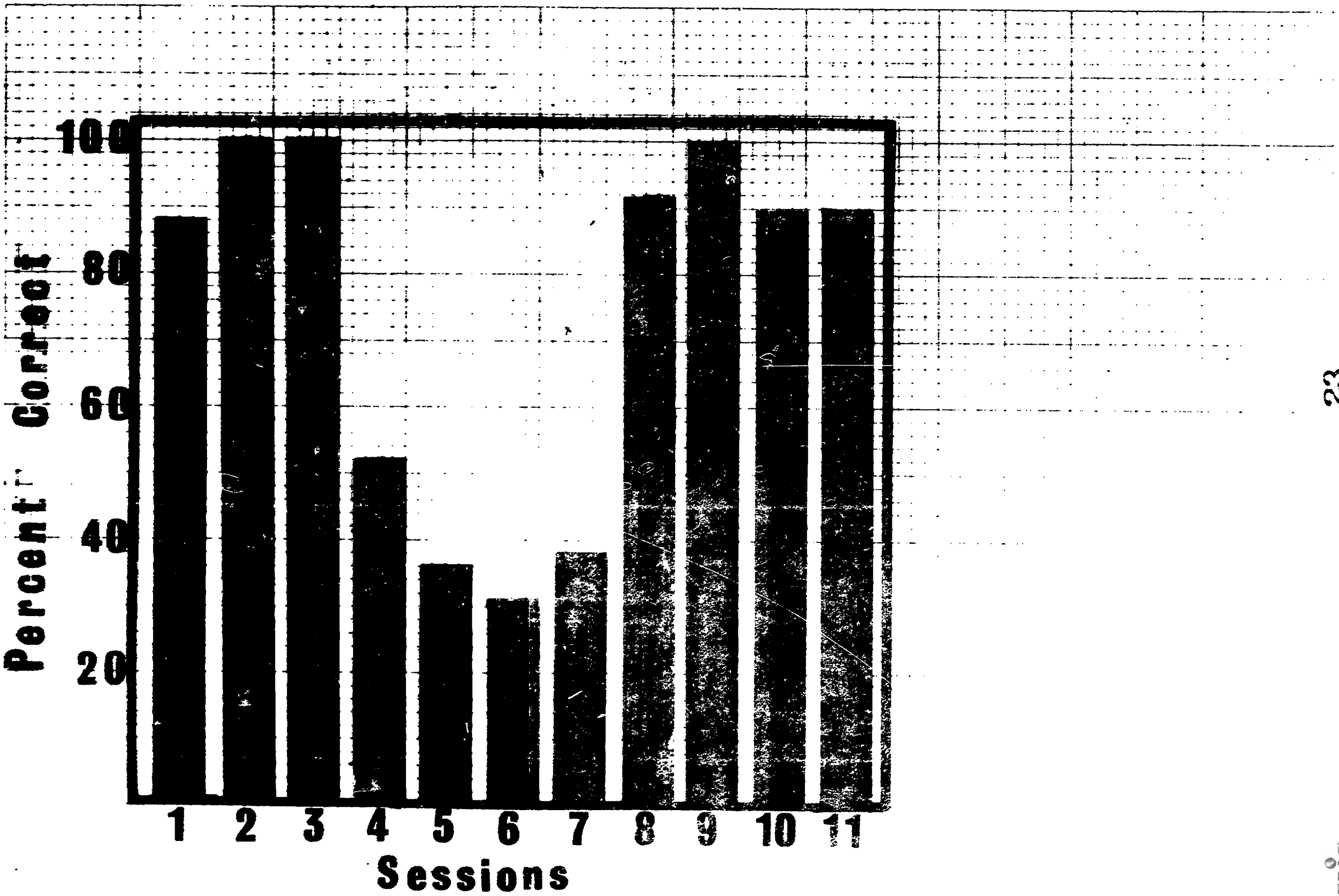
Child____________________ Recorder__________________ Date___________ Page___________

Trial	S^D	Pro	Mod	R	S^R	Comment

Summary: Trials:

S^D:

Correct R:



References

1. Bloom, L., Language Development: Form and Function in Emerging Grammars, Cambridge, Mass: M.I.T. Press, (1970).

2. Bloom, L., "Why not pivot-grammar", J.Speech Hearing Dis., 36, 40-51, 1971.

3. Bostow, D.E. and Bailey, J., "Modification of severe disruptive and aggressive behavior using brief time out and reinforcement procedures", J. Appl. Behav. Anal., 2, 31-37, 1969.

4. Braine, M.D.S., "The ontogeny of English phrase structure: The first phase", Language, 39, 1-13 (1963).

5. Bricker, W. and Bricker, D., "A program of language training for the severely language handicapped child", Except. Child., 37, 101-111, (1970).

6. Brown, R. and Bellugi, U., "Three processes in the child's acquisition of syntax", Harv. Educ. Rev., 34, 133-151, (1964).

7. Daly, D.A., Cantrell, R.P., Cantrell, M.L., and Aman, L.A., "Structuring speech therapy contingencies with an oral apraxic child", J. Speech Hearing Dis., 37, 22-32, (1972).

8. Girardeau, F.L., and Spradlin, J.E., "An introduction to the functional analysis of language" in F.L. Girardeau and J.E. Spradlin, (Eds.) A Functional Analysis Approach to Speech and Language: ASHA Monographs Number 14, Washington D.C.: American Speech and Hearing Association, (1970).

9. Goldstein, S.B. and Lanyon, R.I., "Parent clinicians in the language training of an autistic child", J. Speech and Hearing Disorders, 36, 552-560, (1971).

10. Hartung, J.R., "A review of procedures to increase verbal imitation skills and functional speech in autistic children", J. Speech Hearing Dis., 35, 203-217, (1970).

11. Kirby, F.D. and Toler, H.C., "Modification of pre-school isolate behavior: a case study", J. Appl. Behav. Anal., 3, 309-314.

12. Leonard, L.B., "A preliminary view of information theory and articulatory omissions", J. Speech Hearing Dis., 36, 511-517, (1971).

13. Lovaas, I., "A program for the establishment of speech in psychotic children", in H. Sloane and B. MacAulay (Eds.), Operant Procedures in Remedial Speech and Language Training, Boston: Houghton-Mifflin (1968).

14. Mowrer, O.H. and Ruston, K., "Token loss in speech imitation training", J. Speech Hearing Dis., 36, 486-495, (1971).

15. Miller, W., and Ervin, S., "The development of grammar in child language", In U. Bellugi and R. Brown, (Eds.), The Acquisition of Language, Monograph No. 29. Chicago, Ill: Society for Research in Child Development, (1964).

16. Roth, F., Veth, E., Garrett, T., Rosenbaum, R., and Wisan, A., "The use of a video-taped model to expand language forms in an autistic child", Paper presented at the New York State Speech and Hearing Association, Ellenville, N.Y., April, 1972.

17. Ryan, B., "Operant procedures applied to stuttering therapy for children", J. Speech Hearing Dis., 36, 264-281, (1971).

18. Schell, R.E., and Adams, W.P., "Training parents of a young child with profound behavior deficits to be teacher therapists", J. Spec. Educ., 2, 439-455, 1968.

19. Shaw, C.K., and Shrum, W.F., "The effects of response-contingent reward on the connected speech of children who stutter", J. Speech Hearing Dis., 37, 75-88, (1972).

20. Sulzbacher, S.I., and Costello, J., "Behavioral strategy for language training of a child with autistic behaviors", J. Speech Hearing Dis., 35, 256-277, 1970.

21. Zeilberger, J., Sampen, S.E., and Sloane, H.N., "Modification of a child's problem behaviors in the home with the mother as therapist", J. Appl. Behav. Anal., 1, 47-53, 1968.